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REPORT OF THE FEDERAL HORTICULTURAL BOARD.

UNITED STATES DEPARTMENT OF AGRICULTURE,
FEDERAL HORTICULTURAL BOARD,
Washington, D. C., September 29, 1917.

SIR: I submit herewith an executive report covering the administration of the plant quarantine act for the fiscal year ending June 30, 1917.

Respectfully,

C. L. MARLATT,
Chairman of Board.

Hon. D. F. HOUSTON,
Secretary of Agriculture.

FEDERAL PLANT QUARANTINE ACT.

Under the Federal plant quarantine act of August 20, 1912, as amended March 4, 1913, and March 4, 1917, the entry of foreign nursery stock and other plants and plant products into the United States is regulated, and domestic and foreign quarantines on account of plant diseases and insect pests are established and maintained.

The amendment of this act, approved March 4, 1917, has relation to section 8, the domestic quarantine section. As hitherto worded, this section restricted the promulgation of quarantines to any State, Territory, or District of the United States, or any portion thereof, which could be definitely determined by the Secretary of Agriculture as being invaded by the plant disease or insect involved. The new wording authorizes the Secretary of Agriculture to promulgate a quarantine to include "any State, Territory, or District of the United States, or any portion thereof, when he shall determine that such quarantine is necessary to prevent the spread of a dangerous plant disease or insect infestation"; in other words, without the requirement of the determination of the actual infestation of such area as a whole. Such broad power need be exercised only in the case of diseases or infestations like that of the white-pine blister rust or the citrus canker, where the actual spread can not be accurately determined. A further modification of this section authorizes the Secretary of Agriculture to quarantine and regulate the movement, in addition to plants and plant products, of "any class of stone or quarry products or any other article of any character whatsoever

capable of carrying any dangerous plant disease or insect infestation specified in the notice of quarantine."

ADMINISTRATION AND PERSONNEL.

The Federal Horticultural Board provided for in the act for its administration remains the same as last year, namely: C. L. Marlatt, chairman, Bureau of Entomology; W. A. Orton, vice chairman, Bureau of Plant Industry; George B. Sudworth, Forest Service; W. D. Hunter, Bureau of Entomology; Karl F. Kellerman, Bureau of Plant Industry. The principal administrative officers of the board are R. C. Althouse, secretary of the board and in charge of the administrative office; L. E. Palmer, in charge of cotton importations; E. R. Sasscer, chief inspector; and R. Kent Beattie, chief pathological inspector.

The board maintains at important ports of entry, namely, New York, Boston, Seattle, San Francisco, Calexico and other Mexican border ports, an inspection service to enforce the inspection and other requirements of entry of plants and plant products admitted into the United States under regulation. See list of quarantine and regulatory orders at the end of this report. The inspection force at New York consists of Mr. H. B. Shaw, chief, with three assistants; at Boston, of Mr. R. I. Smith, with two assistants; at Seattle, of Mr. A. G. Webb; at San Francisco, of Mr. Frederick Maskew, with a considerable number of assistants, all State men, acting as collaborators of the board; at Calexico, of Mr. O. A. Pratt; and the Texas-Mexico control and border service of Mr. T. C. Barber, with seven assistants distributed between the ports of El Paso, Eagle Pass, Laredo and Brownsville. This Texas-Mexico border service has particular relation to the prevention of the entry of the pink bollworm discussed elsewhere in this report.

The board maintains effective cooperation with the inspection service of the several States, more particularly in carrying out the regulations governing entry of foreign nursery stock. The number of State inspectors acting as collaborators of the board remains substantially the same as last year, namely, 68.

The State, Treasury, and Post Office Departments have, as in former years, rendered efficient aid in the enforcement of the various quarantine and restrictive orders promulgated under the plant quarantine act.

TERMINAL INSPECTION OF INTERSTATE MAIL SHIPMENTS OF PLANTS AND PLANT PRODUCTS.

During the year the State of Florida availed itself of the provisions of the act of March 4, 1915, by providing for terminal inspection of mail shipments of plants and plant products originating in other States. California was the first State to make provision for such inspection in 1915 and was followed in 1916 by Arizona and Montana. All plants and plant products shipped to these four States under the certification of the Federal Horticultural Board are exempted from such inspection.

NEW PLANT QUARANTINES.

The domestic and foreign quarantines described below are additional or supplementary to the quarantines previously established:

FOREIGN QUARANTINES.

WHITE-PINE BLISTER RUST QUARANTINE.—Amendment No. 2 to Notice of Quarantine No. 7, promulgated April 21, 1917, forbids the importation into the United States from each and every country of Europe and Asia of all species and varieties of currant and gooseberry plants (*Ribes* and *Grossularia*), known to be intermediate host plants, to prevent the further introduction into the United States of the white-pine blister rust.

COTTON SEED QUARANTINE.—Amendment No. 3 to Notice of Quarantine No. 8, promulgated November 4, 1916, revokes amendments 1 and 2 to Notice of Quarantine No. 8, which amendments permitted the importation of cotton seed (including seed cotton) and cottonseed hulls from the States of Nuevo Leon, Tamaulipas, Coahuila, Durango, and Chihuahua, Mexico, for manufacturing purposes. This action was taken on account of the discovery of the occurrence of the pink bollworm in the Laguna district of Mexico.

Amendment No. 4 to Notice of Quarantine No. 8, promulgated March 7, 1917, effective on and after July 1, 1917, makes provision for the importation of cotton seed, seed cotton, and cottonseed hulls from the locality of the Imperial Valley in the State of Lower California, Mexico, under permit from the Secretary of Agriculture and inspection at the port of entry. As a further condition of such entry effective quarantine measures must be maintained by Mexico preventing the entry into Lower California of cotton seed, seed cotton, cottonseed hulls, and lint cotton, baled or unbaled, grown in other parts of Mexico or in foreign countries other than the United States.

INDIAN CORN QUARANTINE.—Amendment No. 1 to Notice of Quarantine No. 24, promulgated March 1, 1917, effective on and after April 1, 1917, makes provision for the importation of Indian corn or maize from Japan and Manchuria under permit and in accordance with the other requirements of the regulations, including sterilization of the corn at the port of entry as a condition of entry.

Amendment No. 2 to Notice of Quarantine No. 24, promulgated April 23, 1917, provides for the importation of Indian corn or maize from the other countries covered by Notice of Quarantine No. 24, namely, southeastern Asia (including India, Siam, Indo-China, and China), Malayan Archipelago, Australia, New Zealand, Oceania, Philippine Islands, and Formosa, under the same regulations.

CITRUS FRUIT QUARANTINE.—Notice of Quarantine No. 28, promulgated June 27, 1917, effective on and after August 1, 1917, prohibits the importation into the United States from eastern and southeastern Asia (including India, Siam, Indo-China, and China), the Malayan Archipelago, the Philippine Islands, Oceania (except Australia, Tasmania, and New Zealand), Japan (including Formosa and other islands adjacent to Japan), and the Union of South Africa of all species and varieties of citrus fruits, excepting only oranges of the mandarin class (including satsuma and tangerine varieties)

on account of a dangerous disease known as citrus canker. Oranges of the mandarin class may be entered under permit, foreign certification, and reinspection on arrival by an inspector of the Department of Agriculture.

DOMESTIC QUARANTINES.

MEDITERRANEAN FRUIT FLY AND MELON FLY QUARANTINE.—Quarantine No. 13, revised, promulgated March 12, 1917, effective on and after June 1, 1917, amends and supersedes Quarantine No. 13, promulgated March 23, 1914. This quarantine prohibits the movement from the Territory of Hawaii into or through any State, Territory, or District of the United States, other than Hawaii, of all fruits and vegetables in the natural or raw state except in manner or method or under conditions prescribed in the regulations of the Secretary of Agriculture. Under the quarantine provision has been made in the regulations for the shipment to the mainland of bananas, pineapples, taro, and coconuts. Other fruits and vegetables may be added to this list when it can be shown that such fruits and vegetables in the form in which they are to be shipped are not and can not be a means of conveying either the Mediterranean fruit fly or the melon fly.

WHITE-PINE BLISTER RUST QUARANTINE.—Quarantine No. 26, promulgated April 21, 1917, effective on and after June 1, 1917, quarantines all the States east of and including the States of Minnesota, Iowa, Missouri, Arkansas, and Louisiana, and prohibits the interstate movement to points outside the quarantined area of all five-leaved pines and currant and gooseberry plants on account of the white-pine blister rust. The quarantine order provides further that no five-leaved pines or black currant plants shall be moved or allowed to move interstate to points outside the area comprising the States of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, and New York. The States just named are the ones most seriously infected.

Immediately following the promulgation of this quarantine it was brought to the attention of this board by the State officials of New York and Pennsylvania that considerable shipments of white pine were being made into these States from New England points in violation of State quarantines. In order to stop further shipments of this kind and at the request of the State officials referred to, Quarantine No. 26 was amended May 1, 1917, by ordering that from and after that date no five-leaved pines or black currant plants should be moved or allowed to move interstate to points outside the area comprising the States of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut.

The survey conducted by the Bureau of Plant Industry, in cooperation with this board, referred to in last year's report, indicates that the white-pine blister rust has continued its spread in this country and that it now occurs in several additional States heretofore believed to be free from it.

GIPSY MOTH AND BROWN-TAIL MOTH QUARANTINE.—Quarantine No. 27, promulgated June 8, 1917, effective on and after July 1, 1917, was originally issued November 5, 1912, as Quarantine No. 4, and has been revised and amended annually to embody the annual revision of

the territory necessitated on account of the changes in distribution of these two insects. This quarantine defines the district in New England infested by the gipsy moth and the brown-tail moth and prohibits the movement in interstate commerce of plants and plant products and stone or quarry products except in accordance with the regulations prescribed therein. The spread of the brown-tail moth during the year was so slight that it was not necessary to extend the quarantine line on account of this pest. The spread of the gipsy moth was also very limited.

As in previous years, the cost of administering this quarantine was paid out of the special appropriation for preventing spread of moths granted to the Bureau of Entomology.

THE PINK BOLLWORM.

The appearance this year of the pink bollworm enemy of cotton in two important cotton-producing countries of this hemisphere, namely, Brazil and Mexico, has added a new and very serious element of menace to the cotton crop of our Southern States.

THE PINK BOLLWORM IN BRAZIL.

The entry and wide distribution of this insect in Brazil, we are advised, came from the introduction by the Brazilian Government between the years 1911-1913 of some 900 tons of Egyptian cotton seed, which was distributed for planting through the various cotton-growing States of Brazil. The existence of the pink bollworm, a new enemy of cotton in Egypt, was not known to Brazilian authorities and this seed was not submitted to any special inspection or to any means of disinfection, with the result that the pink bollworm has been generally distributed and apparently thoroughly established in Brazil.

THE PINK BOLLWORM IN MEXICO.

In Mexico the introduction of this pest as now known came about in a similar manner, namely, through the importation by individuals of a considerable quantity of Egyptian seed in 1911. This seed was first planted in the vicinity of Monterey, Mexico, and the seed product of this crop, undoubtedly more or less infested with the pink bollworm, was taken for planting into the very important Laguna cotton district in north central Mexico.

The existence of this pest in Mexico was determined by this department on November 1, 1916, as a result of the receipt of specimens of infested bolls from a planter in the Laguna district. These bolls were supposed by this planter to be infested with the common Mexican boll weevil, but proved on examination by specialists of the department to contain, in addition to the boll weevil, examples of the pink bollworm of India and Egypt. This unexpected determination of the occurrence of the pink bollworm in Mexico was followed by the issuance of an order by this department (Nov. 4, 1916), prohibiting the further entry into the United States from Mexico, with the exception of the Imperial Valley, State of Lower California, of all cotton seed, cottonseed hulls, and seed cotton, and bringing under regulation and restriction as to ports of entry Mexican cotton lint of all kinds.

The exception of the Mexican portion of the Imperial Valley is warranted, in the belief of the experts of the department, by the fact that no foreign seed has been brought to this valley and that cotton culture in this valley in Mexico is continuous with that on the American side of the line. This district is furthermore separated by the Gulf of Lower California and hundreds of miles of arid plains and mountains from the infested region of northeastern Mexico, and is further protected by strict quarantine and inspection measures enforced by the Government of Mexico in cooperation with the inspection service of this department. Entry of the products from the Mexican portion of this valley is further restricted and protected by regulations.

The original quarantine of July 1, 1913, on account of the pink bollworm, prohibiting the importation of cotton seed and hulls from all foreign countries except from the Imperial Valley of Lower California, was, in 1913-14, lifted as to certain other northern Mexican States, permitting seed and hulls from these States to enter the United States under permit and regulation for milling purposes only. This action was based on the fact that the principal Mexican cotton-growing districts had been repeatedly inspected by experts of this department, and no infesting insects had been found in Mexico not already widespread in the United States, and was taken at the earnest solicitation of certain cotton mills in Texas which had hitherto been the principal purchasers of such Mexican seed and would be seriously affected by the cutting off of this source of supply. This department at that time had no knowledge of any importation of Egyptian or other foreign seed into Mexico.

Following the establishment of a strict quarantine against such products from Mexico on November 4, accurate information was obtained of the disposition of the cotton seed which had come across the border under permit during the season 1916. Prior to that year practically no Mexican cotton seed had been shipped to the United States from Mexico and it was only the disturbed conditions in Mexico and the high prices in the United States which caused the large movement of Mexican seed from the Laguna to the United States in 1916. A total of 436 cars of Mexican seed had entered the United States during this year prior to November 4. This seed went to mills at the following points: Dallas, San Antonio, Hearne, Houston, Beaumont, New Braunfels, Alice, Pearsall, Kaufman, Grand View, and Wolfe City.

CONTROL WORK IN TEXAS.

The Federal Horticultural Board, in cooperation with the State authorities of Texas, began an immediate campaign to expedite the milling of this seed and the destruction of any scattered seed about the premises. This work was carried out with great thoroughness under the direction of experts of the board, Bureau of Entomology, and the Office of Markets and Rural Organization of this department and with the heartiest cooperation on the part of the mills concerned and of the Cottonseed Crushers' Association of Texas.

To meet the situation described in Texas and Mexico, an estimate for an emergency appropriation of \$50,000 was submitted to Congress. This appropriation did not, however, become available until March 4, 1917. In the meantime the control work referred to was

immediately instituted with the aid of funds available from the regular appropriation for the Federal Horticultural Board. The scope of this work is indicated in the wording of the special appropriation referred to, as follows:

To enable the Secretary of Agriculture to meet the emergency caused by the existence of the pink bollworm of cotton in Mexico and the movement of some five hundred carloads of cottonseed from the infested districts in Mexico to milling points in Texas and elsewhere, and to prevent the establishment of such insect in Texas or in any other State by providing for adequate inspection and the employment of all means necessary under rules and regulations to be prescribed by him, to prohibit the movement of cotton and cottonseed from Mexico into the United States, including the examination of baggage and railroad cars or other means of conveyance and the cleaning and disinfection thereof; to inspect mills in Texas or elsewhere in the United States to which Mexican cotton seed has been taken for milling; to supervise the destruction, by manufacture or otherwise, of such seed and the thorough clean-up of the mills and premises; to conduct local surveys and inspections of cotton fields in the vicinity of such mills and ports of entry in order to detect any instances of local infestation; and to determine and conduct such control measures in cooperation with the State of Texas or other States concerned as may be necessary to stamp out such infestation, including rent outside of the District of Columbia, employment of labor in the city of Washington and elsewhere, and all other necessary expenses, \$50,000, available immediately and until expended.

The inspection force to take up the work as indicated in the wording of the appropriation, namely, (1) the clean-up of the mills which had received cotton seed and the inspection and safeguarding of adjacent cotton fields, and (2) the border control, including control of all car and freight traffic between Mexico and the United States, was put under the field charge of Mr. T. C. Barber, with headquarters at San Antonio. A number of entomologists were assigned to the work of mill and field inspection during the summer, and inspectors were assigned to take charge of the border-control work, ultimately distributed as follows: one at Brownsville, two at Laredo, two at Eagle Pass, and two at El Paso. The small and occasional importations through subsidiary ports on the Mexican border are being handled by the inspectors at the main ports.

The clean-up of the mills was made as promptly and as thoroughly as the conditions would permit, but in some instances the Mexican seed was overlaid with vast quantities of domestic seed, and this delayed in some instances until fairly late in the spring the completion of the milling of the entire mass and the final clean-up of the premises.

During the growing season of 1917 inspectors made frequent examinations of all cotton fields in the vicinity of the mills which had received Mexican cotton seed to determine at the earliest moment whether any of the insects had escaped from the imported seed and infested the adjacent fields, provision being made for the prompt destruction of cotton in any field showing any sign of infestation. No trace of infestation in Texas by the pink bollworm was found during the summer, and the outlook was promising that the insect had failed to establish itself.¹

¹ Subsequent to the period covered by this report three outbreaks of the pink bollworm have been determined in Texas. Two of these have been in connection with mills which had received seed from Mexico during 1916, namely at Hearne, reported September 12, and at Beaumont, reported October 15. The infestation at these two points was sporadic and very slight, and clean-up operations of the most thoroughgoing character have presumably stamped out these infestations. The third point is at Anahuac, Tex., reported October 31, and involves many cotton fields, representing, however, a total of only some 50 acres. No explanation of this infestation is now available. Clean-up operations are being instituted. [C. L. M., Nov. 8, 1917.]

Drastic rules and regulations have been issued governing the importation of cottonseed cake, meal, and other cottonseed products into the United States from Mexico and other foreign countries, and the regulations governing the importation of cotton lint have been readjusted to meet these new emergencies. Regulations have also been issued and are being enforced governing the railway and other traffic between Mexico and the United States to safeguard against the accidental entrance of infested seed or insects in connection with such general traffic.

EXPLORATION IN MEXICO.

To secure as definite information as was possible of the distribution of the pink bollworm in the Laguna district and perhaps elsewhere in Mexico, Mr. August Busck, an expert of the Bureau of Entomology, was commissioned by the Federal Horticultural Board to conduct as thoroughgoing an investigation as was possible under the disturbed conditions then obtaining in Mexico. It was desired particularly to determine the possibility of extermination of the pest in Mexico in cooperation with the Mexican Government, and the expedition which was to have been a cooperative one between the United States and Mexico was undertaken after a long series of communications with the Mexican authorities and the Mexican ambassador designate in Washington, conducted through the agency of the Department of State. Unfortunately the conditions were such in Mexico early in April when the investigation was undertaken that it could only be imperfectly completed. Information as to and samples of seed from, the principal ranches in the Laguna were obtained, which indicated the general distribution of this pest throughout the Laguna district, and exact information was obtained of the importations of seed in 1911 from Egypt which brought this pest into Mexico.

Mr. Busck made a minute inspection of the cotton plantings in Mexico near the American border from Matamoros to Eagle Pass and was unable to find any evidence of infestation of cotton fields in this region up to the season of 1917. Two instances of fields planted with seed from the Laguna, however, were located—both of these near the American border. These fields will be kept under observation by agents of the board and further explorations in Mexico will be undertaken as conditions permit.

TECHNICAL INFORMATION FOR INSPECTORS.

In continuation of work conducted by Mr. Busck in Hawaii in relation to this insect, recorded in last year's report of this board, a technical paper on the pink bollworm prepared by Mr. Busck has been published, in which are given descriptions and technical drawings which will enable any competent entomologist to identify this insect in any of its stages. This paper will be of great value to inspectors and others connected with the work of enforcement of the cotton quarantine and regulations.

NURSERY STOCK IMPORTATIONS.

FOREIGN COUNTRIES MAINTAINING INSPECTION SERVICE.

The following countries have provided for inspection and certification of nursery stock in conformity with the regulations prescribed under the plant quarantine act:

Australia.	Ireland.	Philippine Islands.
Barbados.	Italy—Province of Padova (Padua) only.	Scotland.
Belgium.	Jamaica.	Union of South Africa.
Bermuda.	Japan.	Spain.
British Guiana.	Leeward Islands:	Straits Settlements.
Canada.	Antigua.	Switzerland.
Cuba.	St. Christopher-Nevis.	Trinidad.
Denmark.	Dominica.	Wales.
England.	Montserrat.	Windward Islands:
France.	Virgin Islands.	Granada.
Germany.	Luxemburg, Grand Duchy of.	St. Lucia.
Guatemala.	New Zealand.	St. Vincent.
Holland.		
Hongkong.		

This list includes practically all of the countries which have hitherto maintained any considerable commercial trade in nursery stock with the United States. Any other country may obtain the privilege of commercial exportation to the United States by providing an inspection service.

DISTRIBUTION OF IMPORTED NURSERY STOCK, BY STATES.

The following table indicates the distribution by States of nursery stock imported during the fiscal years 1913-14, 1914-15, 1915-16, and 1916-17:

Distribution of imported nursery stock, by States.

State.	Number of cases.			
	1916-17	1915-16	1914-15	1913-14
Alabama.....	173	284	241	125
Arizona.....				4
Arkansas.....	26	22	95	11
California.....	4,891	2,403	3,357	1,929
Colorado.....	162	152	150	152
Connecticut.....	801	1,972	1,372	1,432
Delaware.....	54	53	40	38
District of Columbia ¹	422	491	549	562
Florida.....	200	1,466	2,461	56
Georgia.....	223	191	228	196
Hawaii.....	79	57	20	4
Idaho.....	6	4	5	9
Illinois.....	2,891	4,671	3,316	3,942
Indiana.....	464	577	569	545
Iowa.....	731	905	1,066	394
Kansas (north).....	105	55	51	48
Kansas (south).....	96	292	292	286
Kentucky.....	188	410	320	352
Louisiana.....	228	279	400	416
Maine.....	53	65	42	51
Maryland.....	308	595	756	553
Massachusetts.....	2,112	4,769	4,221	5,115
Michigan.....	910	1,325	1,562	1,232
Minnesota.....	300	746	701	528
Mississippi.....	40	21	23	35
Missouri.....	380	513	592	676
Montana.....	36	32	20	26
Nebraska.....	151	249	217	149

¹ In addition to the commercial shipments referred to, during the period 1916-17 some 3,530 departmental importations for scientific purposes have been inspected by inspectors of the Federal Horticultural Board.

Distribution of imported nursery stock, by States—Continued.

State.	Number of cases.			
	1916-17	1915-16	1914-15	1913-14
Nevada.....			1	2
New Hampshire.....	40	44	53	57
New Jersey.....	6,860	13,295	8,829	10,458
New Mexico.....				1
New York.....	8,058	16,325	12,669	12,363
North Carolina.....	70	121	80	162
North Dakota.....	20	56	12	8
Ohio.....	2,447	3,314	3,374	3,068
Oklahoma.....	14	17	15	13
Oregon.....	326	355	480	580
Pennsylvania.....	3,638	6,096	6,556	9,809
Rhode Island.....	212	562	741	606
South Carolina.....	25	41	39	41
South Dakota.....	19	29	16	16
Tennessee.....	161	185	197	200
Texas.....	183	151	139	184
Utah.....	19	25	27	35
Vermont.....	17	41	24	20
Virginia.....	273	379	354	338
Washington.....	388	421	403	482
West Virginia.....	129	87	87	102
Wisconsin.....	429	509	430	334
Total.....	39,358	64,652	57,192	57,525

The total importations of nursery stock from foreign countries indicated in this statement for the last four years is interesting in view of war conditions affecting the principal exporting countries, namely, France, Holland, and Belgium. The importations of 1913-14 were not influenced by the war, as these importations were completed before the war began. The war had no effect on importations during the next two years and, in fact, there was an increase during the second year of the war, 1915-16. A marked decrease is shown, however, in the last year, 1916-17. The succeeding table shows the country of origin, amount, and nature of these nursery stock importations.

COUNTRY OF ORIGIN AND NATURE OF NURSERY-STOCK IMPORTATIONS.

Country of origin and classes of plants and seeds imported during the year ended June 30, 1917.

Country.	Fruit trees.	Fruit-tree stocks.	Grape-vines.	Bush fruits.	Roses.	Rose stocks.	Forest and ornamental deciduous trees.	Ornamental deciduous shrubs.
Australia.....	137						35	50
Azores.....			15		52			
Belgium.....	25				400		1,851	40,990
Canada.....	1,346							31,000
Cuba.....							50	
Denmark.....								2,250
England.....	4,334	30,250	129	53,391	107,827	2,719,040	5,002	15,166
France.....	1,170,471	9,752,305	10	15,900	104,995	2,402,435	1,254,635	2,466,255
Holland.....	17,082	6,000		6,724	12,073,818	427,868	133,242	594,711
Ireland.....	100				85,053	150,000		613
Italy.....		246,500					12	
Jamaica.....								4
Japan.....	23,471	13,334			36	1	80,986	51,058
Philippine Islands.....							135	
Scotland.....	434		82	591	9,953	177,000	13,012	84
Total.....	1,217,400	10,048,389	236	76,606	12,382,134	5,876,344	1,488,960	3,202,181

Country of origin and classes of plants and seeds imported during the year ended June 30, 1917—Continued.

Country.	Coniferous trees other than pines.	Pines.	Ever-green trees.	Ever-green shrubs.	Field-grown florists' stock.	Stocks, cuttings, or seedlings.	Tree seeds.
							<i>Pounds.</i>
Argentina Republic.....					201		
Australia.....				1	242		28, 184
Azores.....				48			
Belgium.....	25, 943		3, 472	707, 772	31, 488	200	
Bermuda.....					15, 033	500	4, 010
Brazil.....					16, 648		26, 898
Canada.....	3		48		106	1, 000	2, 018
Canal Zone.....					350		
Colombia.....			2		60, 859		
Costa Rica.....					5, 057		
Cuba.....			10	100	43, 255	4	1, 814
Denmark.....					120		
England.....	6, 493		494	88, 756	41, 574	35, 687	5
France.....	476, 206		30, 535	137, 593	65, 937	7, 825, 815	54, 820
Guatemala.....			4		4, 047		
Holland.....	55, 816		8, 882	376, 200	178, 993	35, 751	
Honduras.....						72	
India.....					3, 000	45	
Ireland.....					1, 001	115, 000	
Italy.....					101		516
Jamaica.....				21	33		
Japan.....	16, 772	2, 213	1, 073	33, 758	91, 782	20, 087	2, 042
Java.....					16	100	
Mexico.....					2, 638		
New South Wales.....					195		8, 255
New Zealand.....			9	168	49		10
Panama.....					1, 750		
Philippine Islands.....					15, 338		
Samoa.....					24		
Scotland.....	212		14	458	19, 192	2, 400	
Society Islands.....						8	5
Trinidad.....				13, 000	6, 714		379
Venezuela.....					22, 000		
Total.....	581, 445	2, 213	44, 543	1, 357, 875	627, 743	8, 036, 669	128, 456

COTTON IMPORTATIONS.

The regulation of the importation of Egyptian and other cotton into the United States has continued under the order of the Secretary of April 27, 1915, to guard against the introduction of the pink bollworm and other injurious cotton insects.

The provisions of this order were extended November 4, 1916, to include cotton imported from the Mexican States of Nuevo Leon, Coahuila, Durango, Chihuahua, Tamaulipas, and Lower California, with the exception of the Imperial Valley, which States, prior to that date, had been excepted from the provisions of the regulations, and March 7, 1917, the regulations were further amended, effective July 1, 1917, to include also cotton grown in the Imperial Valley in the State of Lower California.

The board's attention having been called to the fact that practically all cotton waste, including those grades whose disinfection is not required as a condition of entry, is covered either wholly or partially with wrappings from cotton bales, and that these wrappings have adhering to them particles of raw cotton which may contain seed, thus leaving open an avenue for the entrance of the pink bollworm, the entry without disinfection of cotton waste was limited on January 1, 1917, to such waste as is free from all cotton seed and covered with wrappings not previously used to cover cotton, or with

American cotton bagging, commonly known as coarse gunny, which has been used to cover only cotton grown in the United States.

For a similar reason and on the same date the importation of burlap or other fabric which has been used, or of the kinds ordinarily used, for wrapping cotton was brought under restriction. All such material is now imported under permit. Disinfection, as a condition of entry, is required of all second-hand cotton wrappings except such as have been freed from adhering cotton and disinfected abroad by a process approved by this board, and American cotton bagging, commonly known as coarse gunny, which has been used to cover only cotton grown in the United States.

A new element of danger in connection with the possible introduction of the pink bollworm from Mexico was discovered in the fact that most Mexican cotton is inadequately hooped with iron over an insufficient wrapper of coarse sisal fiber netting, permitting considerable leakage or wastage in the process of unloading and handling on the docks, transporting to fumigation plants, and in storage pending and subsequent to fumigation. This state of affairs has been brought to the attention of all Mexican shippers exporting cotton to this country, and they have been advised that a continuation of the system of inadequate baling may necessitate the placing of further restrictions upon the importation of cotton from Mexico.

The entry of cotton and such cotton waste and burlap as require disinfection as a condition of entry is restricted to ports where facilities for the disinfection of cotton are available. At the present time such facilities exist at the ports of Boston, Mass.; New York, N. Y.; Newark, N. J.; and San Francisco, Cal. Since it is mechanically impossible for cotton seed to pass through carding machines, card strips and waste resulting from and subsequent to the carding machine may, if covered with wrappings which conform to the requirements of the regulations, be admitted without disinfection at any ocean port where the board maintains inspection service, including, in addition to the ports mentioned above, Philadelphia, Pa.; New Orleans, La.; and Seattle, Wash.

During the fiscal year, 944 permits for the importation of foreign cotton, cotton waste, and burlap, and 390 licenses authorizing the use of foreign cotton have been issued by the board.

The following table indicates the amount of cotton and cotton waste imported during the fiscal year and the amount of burlap imported from January 1 to June 30, 1917:

Cotton and burlap imported from July 1, 1916, to June 30, 1917, in bales.

Country of origin.	Ginned cotton.	Cotton waste.	Burlap.
Bahama Islands.....	6	1	.....
Brazil.....	4	1,679	.....
Canada.....	.....	80	60
Canal Zone.....	.....	2,884	.....
China.....	33,788	150	.....
Colombia.....	3	18	.....
Cuba.....	.....	27	242
Denmark.....	.....	.....	.....
Ecuador.....	20	.....	.....
Egypt.....	137,524	19,451	20,377
England.....	.....	.....	.....

Cotton and burlap imported from July 1, 1916, to June 30, 1917, etc.—Continued.

Country of origin.	Ginned cotton.	Cotton waste.	Burlap.
France.....		172	9,527
Haiti.....	8,344		
Holland.....			259
India.....	5,120		
Italy.....		6,802	37
Japan.....		8,645	
Mexico.....	2,236	890	63
New Caledonia.....	669		
Nova Scotia.....			22
Peru.....	27,256		
Portugal.....			207
Santo Domingo.....	182	20	
Scotland.....			2,031
Spain.....		214	1,538
Turks Island.....	8		
United States.....	1,177		
Total.....	216,337	41,033	34,363

With the exception of returned American-grown cotton in its original containers, and foreign cotton entered for immediate export and for immediate transportation and exportation, all imported ginned cotton is subject to the disinfection requirement. The above total for ginned cotton includes 1,161 bales of the former and 6,501 bales of the latter. Of the remaining 208,675 bales, 206,404 bales were fumigated on or before June 30, 1917.

Grades of waste resulting from and subsequent to the carding machine are not subject to the disinfection requirement. The above total for cotton waste includes 32,100 bales of such grades. The remaining 8,933 bales were waste originating prior to the carding machine, the fumigation of which is required unless immediately exported. Of these, 2,283 bales were exported and 6,569 bales fumigated on or before June 30, 1917.

Of the above total for burlap 3,274 bales required disinfection and were fumigated on or before June 30, 1917. No record was kept of burlap importations prior to January 1, 1917.

During the fiscal year 404 packages of samples of ginned cotton and 11 packages of waste were imported. The ginned cotton included 10 packages of returned American-grown cotton not subject to disinfection. The waste included 5 packages of waste originating with or subsequent to the carding machine and, therefore, not subject to the disinfection requirement. Of the ginned cotton and waste subject to disinfection, 392 packages were disinfected on or before June 30, 1917.

POTATO IMPORTATIONS.

The restrictions on importations of potatoes from the Dominion of Canada and Bermuda were removed, effective July 1, 1917.

At the same time restrictions were removed on importations for local use only from any foreign country into the Territory of Hawaii. A similar exemption was already in effect as to the Territory of Porto Rico.

In addition to Canada and Bermuda, potatoes may be imported, under proper certification and inspection at the port of entry, from the following countries: Denmark, Holland, Belgium, and Cuba. Provision has also been made for the importation of potatoes from the States of Sonora and Chihuahua, Mexico, and the island of Santo Domingo without foreign inspection and certification. Potatoes from Santo Domingo are permitted entry only through the port of New York, where they are inspected prior to entry. On account of the European war the importations from Europe have practically ceased.

STATE AND FEDERAL INSPECTION OF IMPORTED PLANTS AND PLANT PRODUCTS.

In the course of the examinations by State and Federal inspectors of imported nursery stock and other imported plants and plant products, some 259 different species of insects were intercepted, including one nest of the brown-tail moth from France, two egg masses

of the gipsy moth from France and Belgium, raspberry sawfly from France and England, the gold-tail moth from Holland, an undescribed weevil in avocado seeds from Guatemala, a flat-head borer in chestnut from Japan, 16 nests of "white tree Pierid" from France, and numerous scale insects from various quarters of the globe.

No less than 130 specific diseases of which the causative organism was identified were collected on imported plants. Some of the more important interceptions were citrus canker on pomelo from China, the so-called pineapple disease on sugar-cane from China, sclerotia in radish seed from Japan, and parasitic nematodes in the roots of fig from Spain, Iris from China, and Pimenta seed from Mauritius.

INSPECTION AT PLANT INTRODUCTION GARDENS.

All plant material distributed from Yarrow, Md., was repeatedly examined throughout the year, and a large percentage of it was also inspected at the time of shipment. All material shipped from Miami and Brooksville, Fla., was examined at the time of distribution, and all material for distribution at Chico, Cal., was examined at the time of digging by collaborators of the board.

PINEAPPLE AND BANANA INSPECTION IN HAWAII.

In connection with the fruit fly quarantine of Hawaii, a total of 256,855 bunches of bananas, 12,875 crates of pineapples, 190 lots of coconuts, and 49 crates of taro were inspected for fruit and melon fly infestation and certified for shipment to the mainland.

REGULATORY INVESTIGATIONS.

The regulatory investigations conducted by the board during this fiscal year have had relation to a new and important lepidopterous insect enemy of stone fruits, *Laspeyresia molesta*, probably introduced into several places in this country with flowering cherry trees from Japan; and, in cooperation with the Bureau of Entomology, inspections to determine the further spread of the gipsy and brown-tail moths in relation to the quarantine of the area infested by these insects, and some explorations in Mexico to determine the distribution in that country of the pink bollworm, and similar surveys in Texas in relation to the same insect, more fully discussed elsewhere in this report.

LIST OF CURRENT QUARANTINE AND OTHER RESTRICTIVE ORDERS.

QUARANTINE ORDERS.

The numbers assigned to these quarantines indicate merely the chronological order of issuance of both domestic and foreign quarantines in one numerical series. The quarantine numbers missing in this list are quarantines which have either been superseded or revoked. For convenience of reference these quarantines are here classified as domestic and foreign.

DOMESTIC QUARANTINES.

Date palms.—Quarantine No. 6, with regulations: Prohibits the interstate movement of date palms or date-palm offshoots from Riverside County, Cal., east of the San Bernardino meridian; Imperial County, Cal.; Yuma, Maricopa, and Pinal Counties, Ariz.; and Webb County, Tex.; except in accordance with

the rules and regulations prescribed in the Notice of Quarantine, on account of two injurious scale insects, to wit, the Parlatoria scale (*Parlatoria blanchardi*) and the Phoenicococcus scale (*Phoenicococcus marlatti*).

Cotton seed and cottonseed hulls.—Quarantine No. 9: Prohibits the importation of cotton seed and cottonseed hulls from the Territory of Hawaii on account of the pink bollworm.

Hawaiian fruits.—Quarantine No. 13, revised, with regulations: Prohibits the importation from Hawaii of all fruits and vegetables, in the natural or raw state, except in manner or method or under conditions prescribed in the regulations of the Secretary of Agriculture, on account of the Mediterranean fruit fly and the melon fly.

Sugar cane.—Quarantine No. 16: Prohibits the importation from Hawaii and Porto Rico of living canes of sugar cane, or cuttings or parts thereof, on account of certain injurious insects and fungous diseases of the sugar cane known to occur in these Territories.

Cotton.—Quarantine No. 23, revised, with regulations: Prohibits the movement of cotton from Hawaii to the continental United States, except in accordance with the regulations prescribed in the Notice of Quarantine, on account of the pink bollworm.

Gipsy moth and brown-tail moth.—Quarantine No. 27, with regulations: Prohibits the movement interstate to any point outside of the quarantined towns and territory, or from points in the generally infested area to points in the lightly infested area of stone or quarry products and of the plants and the plant products listed therein until such stone or quarry products and plants and plant products have been inspected by the United States Department of Agriculture and certified to be free from the gipsy moth or the brown-tail moth, or both, as the case may be. This quarantine covers portions of the New England States.

FOREIGN QUARANTINES.

Irish potato.—Quarantine No. 3: Prohibits the importation of the common or Irish potato from Newfoundland; the islands of St. Pierre and Miquelon; Great Britain, including England, Scotland, Wales, and Ireland; Germany; and Austria-Hungary on account of the disease known as potato wart.

Mexican fruits.—Quarantine No. 5, as amended: Prohibits the importation of oranges, sweet limes, grapefruit, mangoes, achras sapotes, peaches, guavas, and plums from the Republic of Mexico, on account of the Mexican fruit fly.

Five-leaved pines, Ribes, and Grossularia.—Quarantine No. 7, as amended: Prohibits the importation from each and every country of Europe and Asia, and from the Dominion of Canada and Newfoundland of all five-leaved pines and all species and varieties of the genera *Ribes* and *Grossularia*, on account of the white-pine blister rust.

Cotton seed and cottonseed hulls.—Quarantine No. 8, as amended, with regulations: Prohibits the importation from any foreign locality and country, excepting only the locality of the Imperial Valley, in the State of Lower California, Mexico, of cotton seed (including seed cotton) of all species and varieties and cottonseed hulls, on account of the pink bollworm.

Seeds of avocado or alligator pear.—Quarantine No. 12: Prohibits the importation from Mexico and the countries of Central America of the seeds of the avocado or alligator pear, on account of the avocado weevil.

Sugar cane.—Quarantine No. 15: Prohibits the importation from all foreign countries of living canes of sugar cane, or cuttings or parts thereof, on account of certain injurious insects and fungous diseases of the sugar cane occurring in such countries. There are no restrictions on the entry of such materials into Hawaii and Porto Rico.

Citrus nursery stock.—Quarantine No. 19: Prohibits the importation from all foreign localities and countries of all citrus nursery stock, including buds, scions, and seeds, on account of the citrus canker and other dangerous citrus diseases. The term "citrus" as used in this quarantine includes all plants belonging to the subfamily or tribe *Citratae*.

European pines.—Quarantine No. 20: Prohibits the importation from all European countries and localities of all pines not already excluded by quarantine on account of the European pine-shoot moth (*Evectria buoliana*).

Indian corn or maize and related plants.—Quarantine No. 24, as amended: Prohibits the importation from southeastern Asia (including India, Siam, Indo-China and China), Malayan Archipelago, Australia, New Zealand, Oceania, Philippine Islands, Formosa, Japan, and adjacent islands, in the raw or un-

manufactured state, of seed and all other portions of Indian corn or maize (*Zea mays* L.), and the closely related plants, including all species of Teosinte (*Euchlaena*), Job's tears (*Coix*), *Polytoca*, *Chionachne*, and *Sclerachne*, on account of the downy mildews and *Physoderma* diseases of Indian corn, except that Indian corn or maize may be imported on compliance with the conditions prescribed in the regulations of the Secretary of Agriculture.

Citrus fruit.—Quarantine No. 28: Prohibits the importation from eastern and southeastern Asia (including India, Siam, Indo-China, and China), the Malayan Archipelago, the Philippine Islands, Oceania (except Australia, Tasmania, and New Zealand), Japan (including Formosa and other islands adjacent to Japan), and the Union of South Africa, of all species and varieties of citrus fruits on account of citrus canker, except that oranges of the mandarin class (including satsuma and tangerine varieties) may be imported on compliance with the conditions prescribed in the regulations of the Secretary of Agriculture.

OTHER RESTRICTIVE ORDERS.

Nursery stock.—In addition to nursery stock, the entry of which was brought under regulation with the passage of the plant-quarantine act of August 20, 1912, orders have been issued by the Secretary of Agriculture regulating the entry of potatoes, avocados, cotton, corn, cottonseed products, and citrus fruits, under the authority contained in section 5 of this act.

Irish potato.—The order of December 22, 1913, covering admission of foreign potatoes under restriction, prohibits the importation of potatoes from all foreign countries, except under permit and in accordance with the other provisions of the regulations issued under said order, on account of injurious potato diseases and insect pests. The regulations issued under this order have been amended so as to permit, free of any restrictions whatsoever under the plant-quarantine act of August 20, 1912, the importation of potatoes from any foreign country into Hawaii and Porto Rico for local use only and from the Dominion of Canada and Bermuda into the United States or any of its Territories or Districts.

Avocado or alligator pear.—The order of February 27, 1914, prohibits the importation from Mexico and the countries of Central America of the fruits of the avocado or alligator pear, except under permit and in accordance with the other provisions of the regulations issued under said order, on account of the avocado weevil. Entry is permitted only through the port of New York and is limited to the large, thick-skinned variety of the avocado. The importation of the small, purple, thin-skinned variety of the fruit of the avocado, and of avocado nursery stock under 18 months of age, is prohibited.

Cotton.—The order of April 27, 1915, prohibits the importation of cotton from all foreign countries and localities, except under permit and in accordance with the other provisions of the regulations issued under said order, on account of injurious insects, including the pink bollworm. These regulations apply in part to cotton grown in and imported from the Imperial Valley, in the State of Lower California, in Mexico.

Corn.—The order of March 1, 1917 (Amendment No. 1, with Regulations, to Notice of Quarantine No. 24), prohibits the importation of Indian corn or maize in the raw or unmanufactured state from the countries and localities listed in Notice of Quarantine No. 24, except under permit and in accordance with the other provisions of the regulations issued under said order, on account of injurious diseases of Indian corn.

Cottonseed products.—The order of June 23, 1917, prohibits the importation of cottonseed cake, meal, and all other cottonseed products, except oil, from all foreign countries, and a second order of June 23, 1917, prohibits the importation of cottonseed oil from Mexico, except under permit and in accordance with the other provisions of the regulations issued under said orders, on account of injurious insects, including the pink bollworm.

Citrus fruits.—The order of June 27, 1917 (Notice of Quarantine No. 28, with Regulations), prohibits the importation from the countries and localities listed therein of all species and varieties of citrus fruits excepting only oranges of the mandarin class (including satsuma and tangerine varieties) on account of the citrus canker disease. Oranges of the mandarin class (including satsuma and tangerine varieties) may be imported under permit and in accordance with the other provisions of the regulations issued under said order.